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ABSTRACT

This paper attempts to provide some insight into the reality of data analysis and interpretation. Community college institutional researchers should obtain the skills and techniques required in order to analyze and interpret data; however, there are a number of practical considerations usually not found in textbooks. These include: (1) understanding the politics of interpreting and presenting data-- when asked to interpret data only in favorable ways, for example; (2) being aware of the limitations of data due to source and method of collection; (3) reviewing the techniques and procedures used in research design for evidence of flaws or bias; (4) discussing implications stemming from the data analysis; (5) providing recommendations deriving from the implications--without them, research is often unused; and (6) using simplicity and brevity in reporting information--users of research reports often have neither the time nor the expertise to get through the technical jargon of a lengthy report. (JDS)

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LOS ANGELES COMMUNITY COLLEGE DISTRICT

# SOME PRACTICAL CONSIDERATIONS IN ANALYZING AND INTERPRETING DATA

by

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A Paper Presented to the Conference on
Community College Institutional Research:
Methods, Trends and Future Prospects

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One of the functions of a community college researcher is to analyze data and interpret findings for decision-makers. This paper presents several aspects regarding that task. As a prerequisite it assumes that data is already available in some format; data which has been connected and treated via statistical methods, or other techniques.

1. The Politics of Data Interpretation

As a practical consideration it is important to understand what your supervisor wants to be reported. It is possible, of course, to interpret data in a number of ways. Such books as "How to Lie With Statistics" attest to the fact that a number of conflicting conclusions can be made about identical data. Such comments as "this is what we are going to do, so give me the data to support my plan," or "we do not want to present any data that would make a case for our opposition" are samples. The problem is that as a researcher you are taught to maintain objectivity, yet not to do what is asked of you is impractical. Other interpretations will probably be unacceptable.

One recommendation is to attempt to convince your supervisor to allow you to analyze data as it should be, regardless of what is to be presented in a public report. An alternative, although admittedly more difficult, is to convince your supervisor to abandon any "biased" plan and allow for an objective public report.

2. Data Limitations

In examining your data it is important to understand some of the limitations that may affect your interpretations. For

example, if data is obtained from only one source you should know the reliability of the source. Data reported by the Bureau of Educational Statistics and the U.S. Census Bureau will probably be more reliable than a "casual" poll taken on your campus which samples students who volunteered information about their drug habits.

Moreover, you should check to ensure that the data is complete. Is there something missing that might affect your conclusions? For example, in reporting on the number of students who transferred to a four-year university over the past five years, it is important that there are no serious gaps in your numerical data. If the numbers are incomplete for one year, you should report it that way and attempt to assess if the missing information may have influenced your analysis. It is also important to determine the currency of your information. If you are drawing conclusions from an old outdated source there is a chance that your interpretations may be incorrect.

Finally, try to find other related data which will help confirm your conclusions. In the case of transfer students, if the same trend exists in other districts and the interpretations those districts provide are similar there is a better likelihood that you are on target. Multiple sources of confirmation are always useful.

3. The Question of Research Design

If you are to draw conclusions about data it is necessary to review the methods used in collecting and analyzing information. In citing a research study that uses a true experimental method, you should determine if the proper procedures were followed, including

the use of control groups, and that the "treatment" really did make a difference. Oftentimes studies are referenced which have been criticized for poor experimental procedures and techniques.

In survey research you should ensure that the questionnaires used do not have major flaws. If sampling techniques were used, check on the sampling procedures. Determine if a biased sample might have been utilized. Was the sample size large enough? Were random sample techniques employed? Was the sample representative of the population at large? There are books and articles written by authors such as Campbell and Stanley that can be invaluable in this effort.

If the results of a program evaluation indicated that an instructional program is working, review the entire evaluation plan. Check to see if the program used an objectives-based approach requiring measurable data. This makes it possible to see if the program objectives were really met. Seek answers to the following questions: Were data collected that lent support to the findings? Were proper methods used in collecting the data? Was there any reason to suspect that bias existed or that the findings were slanted?

4. Discussing the Implications

One of the difficulties involved in interpreting data is that it is usually not enough to discuss findings in their present context. You will probably be asked to discuss the implications of your interpretations and to make some predictions about the future. For example, suppose your college enrollments have been growing dramatically over the past ten years. The question then is, "what will happen next year or the year after and how will it

affect our operation?" This is the type of question that makes a fortune teller out of most of us. One recommendation is to always anticipate this question and prepare yourself in order to answer it. In the case of enrollment projections you might need to develop some skills and training in projections methodology.

In evaluating instructional programs it may not be enough to say that the program is not achieving its objectives. More importantly, in conducting a formative evaluation the decision-maker will need to know what changes can be made to improve the future operations of the program.

The mark of a good research unit is its ability to examine past trends and present conditions, and to then make interpretations and predictions about the future of the institution and its operations.

5. The Need for Recommendations

It is one thing to draw conclusions, present findings, and package them in a neat bundle for use by decision-makers. It is another to translate your interpretations into recommendations for action. This is a procedure often neglected by researchers in community colleges. For example, suppose a student survey has shown that 90% of the students do not use the cafeteria food service? So what? Do you have any recommendations that might improve the utilization of the cafeteria? If not, whoever receives your report is likely to comment, "nice to know, but who cares?" A more common response will be, "give me some recommendations on what to do about it." The point is that recommendations are almost always in order and usually help the decision-maker resolve a problem or make a decision.

6. The Case for Simplicity

Know your audience. If you are interpreting data for researchers the words you choose should be quite different than those used for your college president or board member. The president will probably not know or even care about chi squares, levels of significance, and other educational jargon used in the profession. You will be more successful by briefly summarizing your report in clear concise English on one page. Board members and presidents cannot be expected to read lengthy technical reports. If you must write one, it is useful to provide a brief abstract in the beginning of the report. One suggestion is to attach a separate personal memo which summarizes the contents. Above all, remember to keep it short and simple - KISS method.

SUMMARY AND CONCLUSION

Community college researchers should obtain the skills and techniques required in order to analyze and interpret data. There are, however, a number of practical considerations usually not found in textbooks related to this effort. These include (a) understanding the politics of interpreting and presenting data, (b) being aware of the limitations in your data, (c) reviewing the techniques and procedures used in the research design, (d) discussing implications, (e) providing recommendations, and (f) using simplicity and brevity in reporting information.

It is only through experience and learning from mistakes that the researcher will come to know the reality of data analysis and interpretation. Hopefully, this paper will provide some insight.

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